PATENT

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IN THE CLAIMS:

Please find below a listing of all of the pending claims. The statuses of the claims are set forth in parentheses.

1. (Previously Presented) A method of supplying power to at least one electrical device, the method comprising:

determining a power demand of the at least one electrical device;

determining an efficient operating point for a primary power supply supplying power to the at least one electrical device;

supplying power to meet the power demand of the at least one electrical device using one or more of the primary power supply operating at the efficient operating point and a secondary power supply based on whether the primary power supply operating at the efficient operating point is operable to meet the power demand of the at least one electrical device;

determining whether the power demand of the at least one electrical device substantially exceeds a combined output power for the primary power supply and the secondary power supply for a predetermined period of time; and

reducing the power demand of the at least one electrical device in response to determining the power demand of the at least one electrical device substantially exceeds the combined output power for a predetermined period of time, wherein reducing the power demand of the at least one electrical device comprises migrating workload from the at least one electrical device to another electrical device operable to receive one of a) power from the primary power supply and the secondary power supply, and b) power from a power supply other than the primary power supply and the secondary power supply; and wherein the another electrical device operating more efficiently with the migrated workload.

2. (Original) The method of claim 1, wherein supplying power to meet the power demand of the at least one electrical device comprises:

determining whether the power demand of the at least one electrical device exceeds an output power of the primary power supply operating at the efficient operating point; and

supplying power to the at least one electrical device using the primary and secondary power supply in response to determining the power demand of the at least one electrical device exceeds the output power of the primary power supply operating at the efficient operating point.

3. (Original) The method of claim 2, wherein supplying power to the at least one electrical device comprises the secondary power supply supplying an amount of power substantially equal to the power demand of the at least one electrical device that exceeds the output power of the primary power supply operating at the efficient operating point.

4. (Original) The method of claim 2, wherein determining whether the power demand of the at least one electrical device exceeds an output power of the primary power supply operating at the efficient operating point comprises determining whether the power demand of the at least one electrical device exceeds a range of output powers associated with the efficient operating point.

5. (Original) The method of claim 1, further comprising:

determining whether the power demand of the at least one electrical device exceeds an upper threshold or is less than a lower threshold; and

varying an output power of one or more of the primary power supply and the secondary power supply in response to the power demand exceeding the upper threshold or the power demand being less than the lower threshold.

6. (Original) The method of claim 1, wherein determining a power demand of the at least one electrical device comprises one or more of measuring the output power of the primary power supply and the secondary power supply and measuring heat dissipation of the primary power supply and the secondary power supply.

7. (Original) The method of claim 1, wherein determining an efficient operating point for the primary power supply comprises determining an efficient operating point for the primary power supply based on one or more of a power factor and efficiency of the primary power supply operating at different output powers.

8. (Original) The method of claim 7, wherein determining an efficient operating point for the primary power supply further comprises determining an efficient operating point for the primary power supply additionally based on an efficiency of at least one power system component upstream from the primary power supply.

9. (Original) The method of claim 8, wherein the at least one component upstream comprises a power distribution unit, an uninterruptible power source, and a power distribution system.

10. (Original) The method of claim 1, wherein determining an efficient operating point for the primary power supply comprises determining an efficient operating point based on a cost of electricity from each of at least two different sources.

11. (Original) The method of claim 1, further comprising:

determining whether the power demand of the at least one electrical device is less than an output power of the primary power supply operating at the efficient operating point; and

increasing the power demand of the at least one electrical device in response to the power demand being less than the output power of the primary power supply operating at the efficient operating point.

12. (Original) The method of claim 11, wherein an upper and lower threshold are associated with the efficient operating point, and determining whether the power demand of the at least one electrical device is less than the output power of the primary power supply operating at the efficient operating point comprises determining whether the power demand of the at least one electrical device is less than the lower threshold.

13. (Original) The method of claim 11, wherein increasing the power demand of the at least one electrical device comprises migrating workload to the at least one electrical device from another electrical device.

14. (Original) The method of claim 1, wherein supplying power to meet the power demand of the at least one electrical device comprises supplying power using only the primary power supply in response to determining the power demand of the at least one electrical device is approximately equal to or less than the output power of the primary power supply operating at the efficient operating point.

15-17. (Canceled).

18. (Original) The method of claim 1, wherein the at least one electrical device comprises one or more of at least one computer system, a cooling system, a mass storage device, and an alarm system.

19. (Previously Presented) A power system comprising:

a first power supply and a second power supply operable to supply power to at least one electrical device;

a power delivery control device connected to the first power supply and the second power supply, wherein the power delivery control device substantially maintains the first power supply at an efficient operating point by controlling an output power of the first power supply and an output power of the second power supply to meet the power demand of the at least one electrical device; and

a workload manager controlling the workload of the at least one electrical device and other electrical devices, wherein the power delivery control device is operable to request the workload manager to migrate workload to the at least one electrical device from at least one of the other electrical devices in response to the power demand of the at least one

electrical device falling below the output power of the first power supply operating at the efficient operating point; and

wherein the power delivery control device is operable to request the workload manager to migrate workload from the at least one electrical device to at least one of the other electrical devices in response to the power demand of the at least one electrical device exceeding the output power of the first power supply operating at the efficient operating point for a predetermined period of time.

20. (Original) The power system of claim 19, wherein the efficient operating point of the first power supply is based on one or more output powers for the first power supply where the first power supply is substantially most efficient in generating output power from an input power.

21. (Original) The power system of claim 20, wherein the one or more output powers where the first power supply is substantially most efficient are determined from one or more of a power factor curve and a efficiency curve for the first power supply.

22. (Original) The power system of claim 19, wherein the power delivery control device is operable to increase the output power of the second power supply in response to the power demand of the at least one electrical device exceeding the output power of the first power supply operating at the efficient operating point.

23-24. (Canceled).

25. (Original) The power system of claim 19, wherein the first power supply is operable to receive power generated from a first power source and the second power supply is operable to receive power generated from a second power source, and the efficient operating point of the first power supply is based on a cost of electricity generated from the first power source and a cost of electricity generated from the second power source.

26. (Original) The power system of claim 25, wherein the power delivery control device is operable to increase the load on the first power supply in response to the cost of electricity from the first power source being less than the cost of electricity from the second power source, and the power delivery control device is operable to increase the load on the second power supply in response to the cost of electricity from the second power source being less than the cost of electricity from the first power source.

27. (Original) The power system of claim 19, wherein the at least one electrical device comprises one or more computer systems.

28. (Original) The power system of claim 27, wherein the computer systems are housed in an enclosure in a data center.

29. (Previously Presented) An apparatus for controlling power output from a first and second power supply based on an efficiency of the first power supply, wherein the first and second power supply provide power to at least one electrical device, the apparatus comprising:

at least one power measuring circuit measuring a power demand of the at least one electrical device;

a memory storing at least one threshold associated with an efficient operating point of the first power supply; and

a circuit controlling an output power of the first power supply to substantially maintain the first power supply at the efficient operating point based on a comparison of the power demand of the at least one electrical device to the at least one threshold;

wherein the first power supply is operable to receive power generated from a first power source and the second power supply is operable to receive power generated from a second power source, and the efficient operating point of the first power supply is based on a cost of electricity generated from the first power source and a cost of electricity generated from the second power source; and

wherein the circuit is operable to increase the load on the first power supply in response to the cost of electricity from the first power source being less than the cost of electricity from the second power source, and the power delivery control device is operable to increase the load on the second power supply in response to the cost of electricity from the second power source being less than the cost of electricity from the first power source.

30. (Original) The apparatus of claim 29, wherein the circuit increases an output power of the second power supply and substantially maintains the first power supply at the efficient operating point to meet the power demand of the at least one electrical device in response to the power demand of the at least one electrical device exceeding the at least one threshold.

31. (Original) The apparatus of claim 27, further comprising an interface connected to a workload manager, wherein the circuit is operable to request the workload manager to increase or decrease a workload of the at least one electrical device to substantially maintain the first power supply at the efficient operating point.

32. (Original) The apparatus of claim 29, wherein the at least one power measuring circuit measures an output power of the first power supply and the second power supply to determine the power demand of the at least one electrical device.

33. (Previously Presented) A system comprising:

means for determining a power demand of at least one electrical device means;

a primary power supply means and a secondary power supply means for supplying power to meet the power demand of the at least one electrical device means; and

means for controlling an output power of the primary power supply means and the secondary power supply means based on whether the primary power supply means is operating at an efficient operating point, wherein the efficient operating point is based on a power factor curve for the primary power supply means.

34. (Original) The system of claim 33, further comprising means for determining the efficient operating point of the primary power supply means.

35. (Original) The system of claim 33, further comprising a workload manager means for controlling a workload of the at least one electrical device means, the workload manager means being operable to increase or decrease the power demand of the at least one electrical

device means to substantially maintain the first power supply means at the efficient operating point.

36. (Previously Presented) The system of claim 33, wherein the efficient operating point is further based on an efficiency curve for the primary power supply means.

37. (Original) The system of claim 33, wherein the efficient operating point is based on cost of electricity from a first power source means generating power and a second power source means generating power, wherein the first power source means and the second power source means are operable to supply power to the primary power supply means and the secondary supply means.

38. (Original) The system of claim 33, wherein the means for controlling an output power of the primary power supply means and the secondary power supply means based on whether the primary power supply means is operating at an efficient operating point is further operable to increase the output power of the secondary power supply means in response to the output power of the primary power supply means exceeding an output power of the primary power supply means operating at the efficient operating point.

39. (Original) The system of claim 38, wherein the output power of the secondary power supply is substantially equal to the power demand of the at least one electrical device means that exceeds the output power of the primary power supply operating at the efficient operating point.